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"Explore museums from around the world, discover and view hundreds of artworks at incredible zoom levels, and even create and share your own collection of masterpieces." declares Google. Do this all; right now, for free, on any mobile device, from anywhere in the world at The Google Art Project. [2] How can this be possible? That is a fair question and a multifaceted answer.

The untold story of The Google Art Project has little to do with Google or art, and more to do with the story of the timely meeting of Internet 2.0 and the Learning Sciences and the unplanned reciprocal relationship the two areas have forged with each other during the last decade. The Learning Sciences is an interdisciplinary field of research that seeks to develop a deeper understanding of how we learn in complex and increasingly digital learning environments. [3] The research in the field is influenced by the findings of cognitive science, educational psychology, computer science, and the emerging field of games and learning.

All of these developing understandings are used to improve and design learning environments in the Internet 2.0 era, which are increasingly more rich, complex, and social. To answer the research questions about learning in an Internet 2.0 era, Learning Scientists use a design-based research methodology. This methodology accounts for the characteristics of complex learning systems laden with emergent properties and interactive variables. [4] This allows scientists to account for the robust and dynamic nature of learning in complex environments that provide learners with the immediate ability to store, create, and disseminate knowledge.

As Michael Wesch, a Professor of Anthropology who explores the effects of new media on society and culture, points out.

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[2] Found at: http://www.googleartproject.com/

[3] Found at: http://www.isls.org/index.html

[4] Brown, A.L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences,* 2(2), 141-178.

There is something in the air, and it is nothing less than the digital artifacts of over one billion people and computers networked together collectively producing over 2,000 gigabytes of new information per second. While most of our classrooms were built under the assumption that information is scarce and hard to find, nearly the entire body of human knowledge now flows through and around these rooms in one form or another, ready to be accessed by laptops, cellphones, and iPods. Classrooms built to re-enforce the top-down authoritative knowledge of the teacher are now enveloped by a cloud of ubiquitous digital information where knowledge is made, not found, and authority is continuously negotiated through discussion and participation. [5]

During the Internet 1.0 era, this developing rich cloud of ubiquitous digital information was gathering strength and substance while floating above a landscape ill-equipped to leverage its potential learning opportunities. During the Internet 2.0 era, conceptual and technological advances changed all of this. The Internet, a powerful network, became a participation platform. Rich Internet applications like Flash and Ajax, provided the technical changes necessary to bring desktop experiences to the browsers. Service oriented architecture provided the ability to develop Feeds, Real Simple Syndication, and Mash-Ups. As a result, we have been able to develop web applications that allow learners to access, share, interpret, and design user-generated content as producers and consumers in virtual communities.

Despite the way this has changed how people learn in informal and formal environments, there have been a wide variety of physical, social, and cognitive structures working against the forces of learning in the Internet 2.0 era. "Our physical structures were built prior to an age of infinite information, our social structures formed to serve different purposes than those needed now, and the cognitive structures we have developed along the way now struggle to grapple with the emerging possibilities." [4]

While many of these old physical, social, and cognitive structures stand in the way of rapid change, many new structures are being built to accommodate these changes. In schools, new physical structures are being created, new social structures are being formed, and new cognitive structures are being developed to accommodate learning in this cloud of information. At universities, lecterns and theatre seating are being replaced with networks and modifiable workspaces to support physical and virtual meetings, and in k-12 schools, papers, pencils, and books are being replaced by laptops, tablets, and information clouds.

The new social structures also reflect this change. In addition, the new physical structures, social structures are being built to accommodate the growth of user-

[5] http://www.academiccommons.org/commons/essay/knowledgable-knowledge-able

generated content and social media, blogs, microblogs, wikis, folksonomies, and web applications. These social structures, combined with free digital content storage and distribution services like YouTube, have provided consumers and producers with new social knowledge construction spaces and networks that force us to reconsider the traditional learning paradigms based on print and teacher-directed learning. [6]

The new cognitive structures also reflect this change. The new physical and social structures of learning are pushing educators and Learning Scientists to re-conceptualize old cognitive learning frameworks and strategies and apply them to learning in an Internet 2.0 era. Cognitive strategies that were developed for the physical structures of lecture halls and classrooms, and the social structures of face-to-face communication and interacting with print are being modified to reflect learning in an Internet 2.0 era.

As a result, the changes to the ways we learn have been rapid and unmatched in the history of information and knowledge, and our understanding of how to change is being guided by our developing understandings of the Learning Sciences and Internet 2.0. Learning Science brings the role of the learner and educator into a new place and poses the wonderful question of: What is possible? Anything is possible. Even the ability to "Explore museums from around the world, discover and view hundreds of artworks at incredible zoom levels, and even create and share your own collection of masterpieces."

The Google Art Project has taken museum art from practical obscurity to ambient findability. [7] It is an example of valuing and understanding the important and useful elements of old learning structures and porting those into the new physical, social, and cognitive structures. Doing all of this effectively for other projects and learning opportunities depends on understanding in a detailed and structured way how we learn in an Internet 2.0 environment. Now that we have access to the world's knowledge, it raises the broader question: What does it mean to be knowledgeable? It means moving from being knowledgeable to knowledge-able. [4] Educators are becoming knowledge brokers and learning mentors, using and creating the new physical, social, and cognitive frameworks to guide learners along a path to develop deeper and more complex understandings of what they are learning.

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[6] Michael Wesch, "A Vision of Students Today (and what Teachers Must Do)," *Encyclopædia Britannica* blog, Oct. 21, 2008, http://www.britannica.com/blogs/2008/10/a-vision-of-students-today-what-teachers-must-do/

[7] http://punya.educ.msu.edu/2008/11/21/we-feel-fine-about-ambient-findability-really/